

**What is Claimed is:**

1. A banking or retail transaction network comprising a server and one or more terminals each containing a plurality of peripheral devices where the server is arranged to store applications and driver software for the peripheral devices and communication links are provided from the server to individual peripheral devices to enable such software to be

5 downloaded directly from the server to the devices.

2. A network according to claim 1 in which the peripheral devices include their own embedded processors to which the communication links are able to download software from the server.

3. A network according to claim 2 in which the devices each include hardware control elements controlling the hardware of the device and the processor embedded in a device operates the hardware control elements in a manner determined by the software downloaded to the processor through the communications link.

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4. A network according to claim 1 in which the communication links also enable the peripheral devices of a terminal to communicate with each other.

5. A network according to claim 1 in which the peripheral devices are selected from the following peripheral devices, namely: a user interface, a card reader, a receipt printer, a cash dispenser, and a bar code scanner.

6. A network according to claim 5 in which one of the peripheral devices is a card reader capable of reading from and writing to smart cards.

7. A network according to claim 5 in which one of the peripheral devices is a user interface comprising a keyboard and a display unit.

8. A network according to claim 1 in which the communication links are dedicated links.

9. A banking transaction network according to claim 1 in which the communication links comprise a modem and information signal transfer media enabling transfer of signals from the modem through a telephone network to a server.

10. A banking transaction network according to claim 1 in there is provided a banking information database and a communications link between the banking information database and the central server.

11. A banking transaction terminal including a plurality of peripheral devices in which communication links are provided from individual devices to link said devices directly to an external server.

12. A terminal according to claim 11 in which internal communication links are also provided between the peripheral devices to enable such devices to communicate directly with each other.

13. A terminal according to claim 11 in which the peripheral devices are selected from the following peripheral devices, namely: a user interface, a card reader, a receipt printer, a cash dispenser, and a bar code scanner.

14. A terminal according to claim 13 in which the user interface comprises a keyboard and a display unit.

15. A terminal according to claim 11 in which the communication links are dedicated links.

16. A terminal according to claim 11 in which the communication links comprise a modem and information signal transfer media enabling transfer of signals from the modem through a telephone network to a server.

17. A banking transaction network comprising a plurality of banking transaction terminals according to claim 11 together with a central server to which each of the communication links from the individual peripheral devices of the terminals are connected.

18. A banking transaction network comprising a plurality of banking transaction terminals each including a plurality of peripheral devices, a central server, and communication links from the terminals to the server characterized in that the links extend from each individual peripheral device in a terminal directly to the server.

19. A network according to claim 18 in which there is provided a banking information database and a communications link between the banking information database and the central server.

20. A self-service terminal comprising a plurality of peripheral devices each an independent associated control application, the control applications being operable to communicate with each other; whereby, in use, a peripheral device operates in response to a signal generated by another peripheral device.

21. A terminal according to claim 20, wherein the control applications communicate with each other using a process to process communication protocol.

22. A terminal according to claim 20, wherein the control applications communicate with each other using broadcast signals, whereby a peripheral announces to all other peripherals its present state.

23. A terminal according to claim 20, wherein the control applications communicate with each other using signals addressed directly to selected peripheral devices so that a peripheral device only communicates with those peripheral devices whose operation depends on or is connected with the state of that peripheral device.

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24. A terminal according to claim 20, wherein a control application that operates in response to a signal communicated from another peripheral device acknowledges receipt of that signal.

25. A terminal according to claim 24, wherein each control application is operable to identify any failed peripheral device that does not acknowledge receipt of a signal, and to communicate the functional state of that failed peripheral device to other control applications.

26. A terminal according to claim 20, wherein each peripheral device uses a registry for maintaining a record of the functioning peripheral devices in the terminal.

27. A terminal according to claim 20, wherein the control applications implement a team-building process for indicating their availability.

28. A terminal according to claim 27, wherein as part of the team-building process, each control application associated with an available peripheral device transmits a start-up signal.

29. A terminal according to claim 28, wherein the start-up signal includes an identifier for the peripheral device being initialized and an address at which the peripheral device receives signals.

30. A terminal according to claim 29, wherein the start-up signal is broadcast to other peripheral devices.

31. A terminal according to claim 29, wherein the start-up signal is communicated directly to predetermined addresses that correspond to other peripheral devices.

32. A terminal according to claim 20, wherein the control application associated with each peripheral device creates a functional group registry comprising the addresses and identity of each peripheral device that has sent a startup signal.

33. A terminal according to claim 32, wherein each control application transmits a shut-down signal when its associated peripheral device is no longer able to operate properly; each control application being operable to modify its functional group registry in response to a shut-down signal from another peripheral device to indicate the removal of that peripheral device from operation.

34. A terminal according to claim 20, wherein, in use, each of the control applications are executed on a single central processor.

35. A terminal according claim 20, wherein, in use, each of the control applications is executed on a processor within its associated peripheral.

36. A terminal according to claim 20, wherein the peripheral devices are selected from the following peripheral devices, namely: a user interface, a card reader, a receipt printer, a cash dispenser, and a bar code scanner.

37. A self service terminal network, where the network comprises a server in communication with a terminal, the terminal including a plurality of peripheral devices each having a different independent control application operable to communicate with the other

independent control applications so that a peripheral device operates in response to one or  
5 more signals generated by the control application of another peripheral device.

38. A terminal network according to claim 37, wherein the control application associated with each peripheral device has direct access to the server.

39. A terminal network according to claim 37, wherein the control application associated with each peripheral device accesses the server indirectly.

40. A peripheral device for use in a self service terminal having a plurality of such devices each having an independent control application that is operable to communicate the internal states of the peripheral device to other peripheral devices in the terminal and to operate in response to signals communicated from control applications of the other peripheral  
5 devices.

41. A transaction network comprising a server and at least one terminal, each terminal containing a plurality of peripheral devices, the network being characterized in that the server is arranged to store software for the peripheral devices, and communication links are provided from the server to each peripheral device, whereby each peripheral devices is  
5 operable to download software directly from the server.

42. A transaction network according to claim 41, where each peripheral devices is operable to configure itself using the downloaded software.

43. A transaction network according to claim 41, where the software stored on the server includes applications software and peripheral driver software.

44. A transaction network according to claim 41, where each peripheral device includes an embedded processor that operates with the communication links to download software from the server.

45. A transaction network according to claim 44, where each peripheral device includes hardware control elements controlling the hardware of the peripheral device, and the embedded processor operates the hardware control elements in a manner determined by the downloaded software.

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46. A transaction network according to claim 41, where each peripheral device has a non-volatile memory for storing boot-up information, whereby, on powering the peripheral device, the contents of the non-volatile memory may be used for initializing the peripheral device.

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47. A transaction network according to claim 41, where the peripheral devices communicate with the server using the TCP/IP protocol.

48. A transaction network according to claim 41, where the communication links also enable the peripheral device of a terminal to communicate with each other.

49. A transaction network according to claim 41, where the peripheral devices are selected from the following peripherals, namely: a user interface, a card reader, a receipt printer, a cash dispenser, and a bar code scanner.

50. A transaction network according to claim 41, where an information database is in communication with the server.

51. A transaction network according to claim 41, where the communication links include a router for concentrating information from the peripheral devices and transmitting that information across a single connection.

52. A transaction terminal including a plurality of peripheral devices each having communication hardware for use in connecting to a server, whereby, in use, each peripheral device is operable independently to access the server and to download software directly therefrom.

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53. A transaction terminal according to claim 52, where the peripheral communication hardware is an Ethernet adapter.

54. A transaction network system comprising a server and at least one terminal, each terminal containing a plurality of peripheral devices, where the server stores a plurality of independent software modules, where at least one software module is associated with each peripheral device, and where communication links are provided from the server to each peripheral device, whereby each peripheral device is operable to download one or more of the independent software modules directly from the server and to configure itself using the one or more downloaded software modules.

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55. A transaction processing terminal comprising a plurality of networked peripheral devices that interoperate through broadcasting their internal states to one another.

56. A networked peripheral device that operates through broadcasting its internal states to other peripheral devices in a connected system comprising a transaction processing terminal.



57. A peripheral device that operates in response to other peripheral devices broadcasting their internal states in a connected system comprising a transaction processing terminal.

58. A peripheral device that operates as a state machine based upon hardware states communicated through interfaces to hardware under control of the peripheral device, and based upon messages received from other peripheral devices over a connected network comprising a transaction processing terminal.

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59. A transaction processing terminal comprising a plurality of networked peripheral devices that interoperate through peer to peer communications with one another, and a firewall enabling communications between the networked devices and a server connected on the network, but blocking the peer to peer communications between devices from being transmitted to the server.

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60. A plurality of networked peripheral devices that announce each other's functional departure from a system by broadcasting the identity of any device not acknowledging receipt of a previous communication.

61. A peripheral device that announces the functional departure of other peripheral devices from a connected system comprising a transaction processing terminal by broadcasting the identity of any peripheral device failing to acknowledge receipt of a previous communication.

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62. A peripheral device that records the functional departure of other peripheral devices from a connected system comprising a transaction processing terminal by deleting reference in an internal registry to any peripheral device announcing it shutdown or failing to acknowledge receipt of a previous communication.

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63. A server device that operates both as a repository for software used by a plurality of interoperable peripheral devices communicating over a connected network comprising a transaction processing terminal, and as a proxy server for data required by at least one of the peripheral devices to process a transaction.

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64. A peripheral device that interoperates as part of a functional group of peripheral devices between which messages are exchanged over a connected network, where the messages include identifiers of the sending device and of the functional group, and where the functional group comprises a transaction processing terminal.

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65. A peripheral device that interoperates as part of a functional group of peripheral devices between which messages are exchanged over a connected network, where the messages are in the form of serialized objects that are reconstructed upon receipt, and where the functional group comprises a transaction processing terminal.

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66. A peripheral device that announces its initialization by broadcasting a message to other peripheral devices that interoperate as a group over a network, where said group comprises a transaction processing terminal.

67. A peripheral device that initializes its operations by transmitting a message to other peripheral devices that interoperate as a group over a network, where the message includes identifiers of the device and a port address at which the device receives messages, and where said group comprises a transaction processing terminal.

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68. A peripheral device that initializes its operations by transmitting a start-up message to a range of addresses on a connected network at which the message may be received by one or more other peripheral devices that interoperate as part of a functional group comprising a transaction processing terminal.

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69. A peripheral device that initializes its operations by transmitting a start-up message used to create a registry of multiple peripheral devices that interoperate as part of a functional group comprising a transaction processing terminal, where the registry is used to identify the devices that are functionally present and to direct communications within the functional group.

70. A peripheral device that announces its shutdown by broadcasting a message to other peripheral devices that interoperate as a group over a network, where said group comprises a transaction processing terminal.

71. A peripheral device that terminates its operations by transmitting a closing message used to delete reference to the peripheral device from a registry of multiple peripheral devices that interoperate as part of a functional group, where the registry is used to identify the devices that are functionally present and to direct communications within the functional group, said functional group comprising a transaction processing terminal.

72. A functional group of peripheral devices that interoperate through communications over a connected network in which each device synchronously maintains a dynamic registry used to identify the devices that are functionally present and to direct communications within the functional group of devices, where said functional group comprises a transaction processing terminal.

73. A networked peripheral device having a memory queue storing incoming messages from other peripheral devices that are part of a functional group, where the messages are stored in the queue in the order received and the device accesses the oldest stored message first and deletes a message from the queue once the message is accessed, and where said functional group comprises a transaction processing terminal.

74. A transaction processing terminal comprising a plurality of networked peripheral devices including a user interface that removes otherwise available services from a displayed user menu when an associated peripheral device is functionally absent.

75. A transaction processing terminal including a plurality of modular elements that intercommunicate through a connected sub-network using IP protocols, and a router that concentrates communications between the modular elements and a remote server through a single IP protocol connection to the server.

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76. A peripheral device for a transaction processing terminal including a dedicated processor, read/write memory and an I/O port, and configured for installation of software by download from a remote server using a Dynamic Host Control Protocol service when the peripheral device is initialized.

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77. A peripheral device for a transaction processing terminal including a dedicated processor, read/write memory and an I/O port, and configured for re-booting of the peripheral device initiated through a remote server over a connected network using a remotely executing Dynamic Host Control Protocol service.

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78. A peripheral device for a transaction processing terminal including a dedicated processor, read/write memory and an I/O port, and further including a web server facility enabling communications over a connected IP network between the peripheral device and a remote terminal using a web browser utility executing on the remote terminal.

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79. A peripheral device for a transaction processing terminal including a dedicated processor, read/write memory and an I/O port, and further including state of health and diagnostic facilities accessible by a remote terminal over a connected IP network.

80. A peripheral device for a transaction processing terminal including a dedicated processor, read/write memory and an I/O port, and further including state of health and diagnostic facilities accessible by a remote wireless PDA terminal over a connected IP network.

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81. A peripheral device for a transaction processing terminal including a dedicated processor, read/write memory and an I/O port, and configured to communicate notice of error and designated state of health conditions to a remote terminal over a connected IP network.

82. A transaction processing terminal comprising a plurality of networked peripheral devices each having its own data processor controlling operations of the device through execution of software applets downloaded to the device over a connected network.

83. A transaction processing terminal comprising a plurality of networked peripheral devices each having its own data processor controlling operations of the device through execution of software applets downloaded to the device over a connected network via Web browser functioning incorporated within the device.

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84. A transaction processing terminal comprising a plurality of networked peripheral devices each having its own data processor controlling operations of the device through execution of interpreted software applets downloaded to the device over a connected network and interpreted via virtual machine functioning incorporated within the device.

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85. A transaction processing terminal comprising a plurality of networked peripheral devices each having its own data processor controlling operations of the device through execution of compiled software byte code downloaded to the device over a connected network and compiled via compiler functioning incorporated within the device.

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86. A transaction processing terminal comprising a plurality of networked peripheral devices each having its own data processor that directly executes byte code downloaded to the device over a connected network to control operations of the device.

87. A banking or retail transaction terminal comprising a plurality of peripheral devices having control applications associated therewith, communication links for enabling the control applications to have individual access to an external server, and a central processor for providing processing power for the peripheral devices.